

# Sequences, Series, Sigma Notation Practice

**Find the next three terms in each sequence.**

1) 1, 9, 25, 49, 81, ...

2) 0.5, -1, 2, -4, 8, ...

3) 28, 18, 8, -2, -12, ...

**Find the first four terms in each sequence.**

4)  $a_n = (2n)^2$

5)  $a_n = 9 - 5n$

6)  $a_n = 5 + 10n$

7)  $a_n = \frac{2 + a_{n-1}}{2}$   
 $a_1 = -14$

8)  $a_n = a_{n-1} \cdot 6$   
 $a_1 = -2$

9)  $a_n = na_{n-1}$   
 $a_1 = -1$

**Determine if each sequence converges or diverges.**

10)  $a_n = a_{n-1} \cdot 4$   
 $a_1 = 1$

11)  $a_n = \frac{2 + a_{n-1}}{2}$   
 $a_1 = -6$

**Evaluate each series.**

12)  $\sum_{a=1}^5 a(a-2)$

13)  $\sum_{n=5}^{10} (2n^2 - 3)$

14)  $\sum_{n=1}^6 \frac{6}{n}$

15)  $\sum_{n=5}^{10} \frac{240}{n}$

**Rewrite each series using sigma notation.**

16)  $\frac{9}{2} + 3 + \frac{9}{4} + \frac{9}{5}$

17)  $9 + 16 + 25 + 36$

18)  $8 + 12 + 16 + 20$

19)  $\frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \frac{1}{7} + \frac{1}{8} + \frac{1}{9}$

## Answers to Sequences, Series, Sigma Notation Practice

- 1) 121, 169, 225      2) -16, 32, -64      3) -22, -32, -42      4) 4, 16, 36, 64  
5) 4, -1, -6, -11      6) 15, 25, 35, 45      7) -14, -6, -2, 0  
8) -2, -12, -72, -432      9) -1, -2, -6, -24      10) Diverges  
11) Converges      12) 25      13) 692      14)  $\frac{147}{10}$   
15)  $\frac{4262}{21}$       16)  $\sum_{a=2}^5 \frac{9}{a}$       17)  $\sum_{m=3}^6 m^2$       18)  $\sum_{m=2}^5 4m$   
19)  $\sum_{a=4}^9 \frac{1}{a}$